

ABSTRACT OF THE INVENTION

A method for solution mining nahcolite, capable of extracting nahcolite from geological formations lean in nahcolite comprising injecting high pressure water (which may include recycled aqueous solution of bicarb and sodium carbonate) at a temperature of at least 250°F into the formation, dissolving nahcolite in the hot water to form a production solution and recovering the production solution. The invention also includes the processing of the production solution to provide sodium carbonate and, optionally, sodium bicarbonate, comprising: decomposing the sodium bicarbonate portion of the hot aqueous production solution to form a hot aqueous solution of sodium carbonate; evaporating water from the hot aqueous solution comprising sodium carbonate to form a concentrated solution of sodium carbonate; producing sodium carbonate monohydrate from the concentrated solution of sodium carbonate by crystallization; and dewatering and calcining the sodium carbonate monohydrate to produce anhydrous sodium carbonate.